

THE FIRST RECORDS OF *GNAPHALIUM SYLVATICUM*
(ASTERACEAE) AND *EMPETRUM EAMESII*
SSP. *ATROPURPUREUM* (EMPETRACEAE)
IN NEW YORK STATE

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ABSTRACT

Two additions to the native state flora were encountered in the Adirondack Mountains of northeastern New York: *Gnaphalium sylvaticum* and *Empetrum eamesii* ssp. *atropurpureum*. Both taxa are recommended for state endangered species status.

Key Words: Endangered species, *Empetrum eamesii* ssp. *atropurpureum*, *Gnaphalium sylvaticum*, Biosphere Reserve, Adirondacks, New York State

Two native species, previously unrecorded in the New York State flora, were discovered during field work in 1989. Populations of both taxa are within the "blue-line" boundary of Adirondack Park and within the recently established Champlain-Adirondack Biosphere Reserve.

Gnaphalium sylvaticum L., woodland cudweed, is an early successional perennial with a circumboreal distribution. It has been collected in the adjacent states of Pennsylvania, where it is considered adventive (Wherry et al., 1979), and in Vermont (Seymour, 1982), where it is considered a rare native (Thompson, 1989) and was recently proposed for state endangered status (Thompson, pers. comm.). Scoggan (1978–1979) reported Canadian collections from Ontario and Quebec. The New York station was discovered in August 1989, at an elevation of 2000 feet (610 meters) along the Middle Branch of the Black River in the town of Ohio, Herkimer Co. (Zkia and Jenkins 10723 NY, NYS, VT). About 200 *Gnaphalium sylvaticum* plants were seen, occupying north-facing openings, where an old, grassy logging road crossed the river. Most of the population was south of the waterway.

Vegetation at the site was dominated by a thick turf of *Danthonia compressa* Aust., but seedlings of *Acer rubrum* L., *Betula alleghanensis* Britt., and *Picea glauca* (Moench) Voss were observed, as well as *Agrostis scabra* Willd., *Aster acuminatus* Michx., *Dennstaedtia punctilobula* (Michx.) Moore, *Panicum clandestini-*

num L., *Rubus hispidus* L., *R. idaeus* L., *Uvularia sessilifolia* L., *Veronica officinalis* L., and *Viola* sp. The soil is acidic pebbly sand, overlying metasedimentary bedrock (Isachsen and Fisher, 1970).

Should the New York population be treated as native or an introduction? Two statements can be made for non-native status. First, Pease (1964), Roland and Smith (1969), and Wherry et al. (1979) do not treat it as native, but offer no explanation. Second, *Gnaphalium sylvaticum* is extremely rare in an abundant open habitat, which suggests, but does not prove, that it arrived recently rather than persisting since pre-settlement times. This argument fails to recognize that a number of native species are changing their ranges this century (e.g., many grasses in Vermont; Zika, 1990). Dispersal or recruitment difficulties could also explain the rarity of *Gnaphalium sylvaticum* in the Adirondacks, at the southern limit of its range.

Stronger arguments can be given to support native status. First, it is treated as a native in boreal habitats in our area, since it has a circumboreal distribution, by Fernald (1950), Gleason and Cronquist (1963), Scoggan (1950, 1978–79), and Seymour (1982). Second, the dominant associates and most of the minor associates at the site are native early successional species, not Eurasian introductions. Third, it is a perennial, not an annual.

Some early successional species are worthy of conservation efforts. Natives which are quite rare or local in our area and occur on naturally-eroding sites are often protected by conservation laws (e.g., *Gnaphalium supinum* L., *Arnica lanecolata* Nutt., *Lycopodium sitchense* (Rupr.) Fern., *Primula mistassinica* Michx., *Braya humilis* (C. A. Mey.) Robins., *Trisetum melicoides* (Michx.) Vasey, *Saxifraga oppositifolia* L.). *Gnaphalium sylvaticum* fits the early successional but rare or local category in New York.

Accepting *Gnaphalium sylvaticum* as a native, it can be argued it is in need of conservation in New York. The pre-settlement habitat of *Gnaphalium sylvaticum* and its associates would have been dry soil in open woods, rocky slopes, slides, cliffs, riverbanks, etc. (Fernald, 1950; Scoggan, 1950). These habitats are common in the Adirondacks (as are grassy north-facing logging roads). *Gnaphalium sylvaticum*'s presence on a logging road suggests there is (or was) another population in the area. Jerry C. Jenkins (pers. comm.) conducted extensive field work in New York's Hamilton and Herkimer Counties in 1989, and although familiar with the

station in the town of Ohio, could not locate additional stations. Ironically, the logging operation that opened the habitat for the known population could later have destroyed a nearby population in a naturally-eroding location.

New York's solitary known population of *Gnaphalium sylvaticum* is restricted to a disturbed site, where logging or recreational vehicles could extirpate the species. The persistence of woodland cudweed in New York is at present jeopardized by forest succession as well as by human activities. These data suggest *Gnaphalium sylvaticum* should be placed on the state endangered species list, under the provisions of New York law (E. C. L. 9-1503).

Empetrum eamesii Fern. & Wieg. ssp. *atropurpureum* (Fern. & Wieg.) D. Löve is also newly reported for the flora of New York State. Taxonomic treatments of the genus *Empetrum* vary, as Hultén (1971) points out. There is considerable variation in indument and sexual systems in some parts of North America. New York State *Empetrum* populations are divisible into two taxa. Following the nomenclature in Kartesz and Kartesz (1980) and Mitchell (1986), they are *Empetrum nigrum* L. ssp. *hermaphroditicum* (Lange) Bocher, black crowberry, and *E. eamesii* ssp. *atropurpureum*, purple crowberry [= *E. rubrum*, *E. atropurpureum*]. In New York the two species are easily separated by their indument and fruit color: mature purple crowberry has purple berries, white tomentum on the shoots and leaf margins, and is eglandular; black crowberry has black berries (unripe fruits can be purple), sparsely glandular shoots and leaf margins, and is not tomentose. Indument characters are most easily observed early in the growing season, on fresh shoots, but are visible in the field at least as late as September, and show clearly in dried herbarium material on older twigs under magnification.

Empetrum eamesii ssp. *atropurpureum* was credited to New York in *The Flora of Nova Scotia* (Roland and Smith, 1969), but New York was not included in the range descriptions of the regional manuals (Fernald, 1950; Gleason and Cronquist, 1963). Local treatments also omitted the taxon (Torrey, 1842; Peck, 1899; House, 1924; Mitchell, 1986). Purple crowberry was first collected in the high peaks of the Adirondack Mountains in 1939, but the specimen was misidentified as black crowberry. Two additional stations of *Empetrum eamesii* were located by this author in 1989. These New York records are all from Essex County:

Town of Keene, July 1989, one clone, south-facing alpine slope on Haystack Mt., elev. ca. 4700 feet (1430 meters), (*Regan & Zika 10702 NYS*).

Town of Newcomb, July 1939, open exposure, in a dense *Abies balsamea* krummholz, on Santanoni Peak, elev. ca. 4600 feet (1400 meters), (*Heady 544 NYS*).

Town of North Elba, July 1989, one clone, west-facing alpine slope on Wright Peak, elev. ca. 4300 feet (1310 meters), (*Zika 10684 NYS*).

Both species of *Empetrum* are found in alpine zones in the northeastern United States, often within a few feet of each other. Harris et al. (1964) and others have pointed out that in New England purple crowberry tends to be found on lesser rocky peaks and the lowest alpine ridges, and drops out of the alpine community at higher elevations, where black crowberry thrives among the low heaths. Purple crowberry in New York occurs at the upper end of the transition zone between krummholz and dwarf alpine heaths, partially sheltered by dwarfed trees less than 1 meter tall. The following species have been recorded as associates: *Abie balsamea* (L.) Mill., *Betula cordifolia* Ryel., *Chamaedaphne calyculata* (L.) Moench, *Clintonia borealis* (Ait.) Raf., *Deschampsia flexuosa* (L.) Trin., *Diapensia lapponica* L., *Gaultheria hispidula* (L.) Muhl. ex Bigel., *Ledum groenlandicum* Oeder, *Maianthemum canadense* Desf., *Oxalis acetosella* L., *Picea mariana* (Moll.) BSP., *Potentilla tridentata* Soland. ex Ait., *Scirpus cespitosus* L., *Sphagnum* sp., *Spiraea septentrionalis* (Fern.) Löve & Löve, *Trientalis borealis* Raf., *Vaccinium boreale* Hall & Aald., *V. uliginosum* L. ssp. *pubescens* (Wormsk ex Hornem.) Young. In addition, *Empetrum nigrum* ssp. *hermaphroditicum* occurs on the three New York peaks with *Empetrum eamesii* ssp. *atropurpureum*. The bedrock on each of the mountaintops is acidic anorthosite (Isachsen and Fisher, 1970).

An attempt in 1989 failed to re-locate Heady's 1939 *Empetrum eamesii* ssp. *atropurpureum* station on Santanoni Peak. Thus in New York the species is represented by only two small extant plants, both along popular hiking trails. Heavy trail use in the New York alpine region is causing considerable erosion of alpine vegetation mats and soils (Ketchledge et al., 1985). Numerous unauthorized trails dissect the alpine turf, and increase the rate and zone of erosion. Trampling or erosion could destroy the pur-

ple crowberry colonies in the immediate future. These data strongly suggest that *Empetrum eamesii* ssp. *atropurpureum* should be placed on the state endangered species list.

Both woodland cudweed and purple crowberry are widespread in eastern Canada and northern New England; neither species is federally threatened or endangered.

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